Hypothesis testing Assignment

Data set on 1,000 births from the birth records released by the state of North Carolina in 2004 is given on canvas. This data set has been of interest to medical researchers who are studying the relation between habits and practices of expectant mothers and the birth of their children.

Assuming that the data provided is the population, draw a sample of 150 births from the given data set. In this assignment you will test hypotheses relating to age, weeks, weight, lowbirthweight, and
smoke.
Begin the assignment by proving a frequency table for the percentage of lowbirthweight birth weights and a
frequency table for the percentage of smokers. Create a summary table (mean, median, standard deviation, minimum, maximum) for the continuous variables of age, weeks, and weight.

With the information that you gather from this summary, test the following:
a. Determine if there is sufficient evidence to conclude the mean age of mothers giving birth in North Carolina is over 25 years of age at the 0.05 level of significance.
b. Find a 95% confidence Interval for the mean age of mothers giving birth in North Carolina.
c. Determine if there is sufficient evidence to conclude the mean weeks of gestation of mothers giving birth in North Carolina is below 39 weeks.
d. Find a 95% confidence Interval for the mean weeks of gestation of mothers giving birth in North Carolina.
e. Determine if there is sufficient evidence to conclude that the mean weight of babies born to mothers in North Carolina is above 7 lbs. (Note that there are 16 ounces in a pound.)
f. Find a 95% confidence Interval for the mean weight of babies born to mothers in North Carolina.
g. Determine if there is sufficient evidence to conclude the percentage of lowbirthweight birth weight
children in North Carolina is above 6%.
h. Find a 95% confidence Interval for the percentage of lowbirthweight birth weight children in North
Carolina.
i. Determine if there is sufficient evidence to conclude the percentage of mothers who smoke in North Carolina is above 10%.
j. Find a 95% confidence Interval for the percentage of mothers who smoke in North Carolina.
k. Construct a side-by-side boxplot for weights for smokers and non-smokers. Comment on whether you believe you will reject or fail to reject the null hypothesis. Determine if there is sufficient evidence to conclude the mean weight of smoking mothers is lowbirthweighter than the mean
birth weight for non-smoking mothers.

For each of the tests above, in your report, be sure to

1. Clearly state a null and alternative hypothesis
2. Give the value of the test statistic
3. Report the P-value
4. Clearly state your conclusion (i.e. ‘Reject the Null’ is not sufficient)

For each of the CI’s above, in your report, be sure to

1. Interpret the results in a proper way.

Be sure to check the assumptions associated with a test of a proportion (g - j).

Lastly, summarize the results in your own word. You can perform your own hypothesis based on your idea of the results. Be sure to check all the necessary assumptions for each test